

## Child Protection Foundation Training

# Physical Abuse - Burns

# Core Competencies

- ▶ Identify and document physical and medical evidence as required by the allegation.
- ▶ Accurately assess safety:
  - Identify the injury
  - Identify specific threat to safety
  - Identify evidence of the threat to safety

# Burns



# Burns

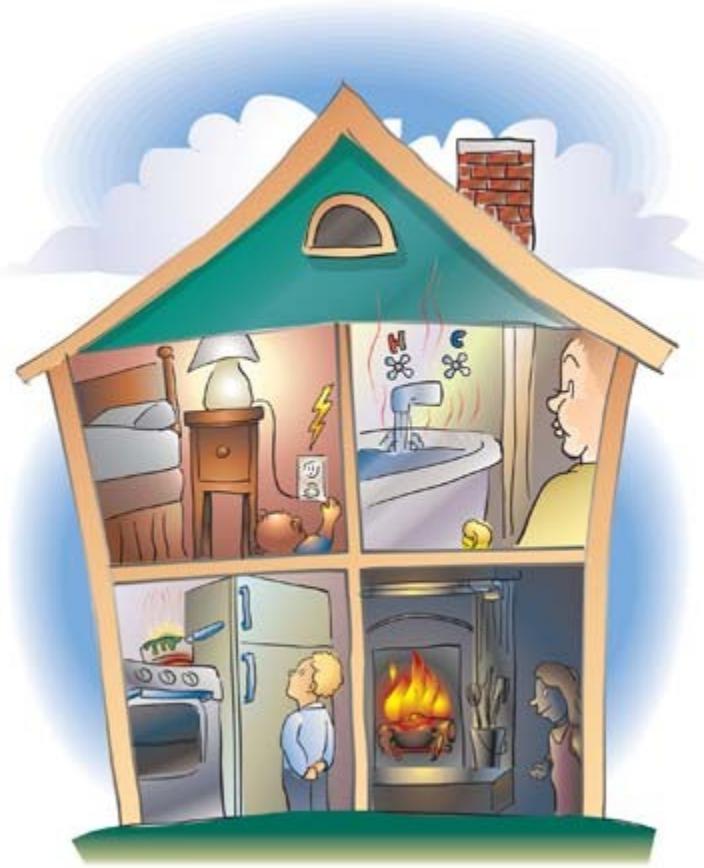
- ▶ Hospitalization: 30,000 children / year
- ▶ Up to 1,000 deaths/year
- ▶ 10%-20% of pediatric burns due to abuse
- ▶ Mortality from accidental burns  
approximately 2%
- ▶ Mortality from inflicted burns up to 30%
  - Often delay in seeking care
  - More severe burn

# Classification

- ▶ **Superficial** (1<sup>st</sup> degree)
  - Limited to outer layer of skin
  - Redness & pain, i.e. sunburn
- ▶ **Partial thickness** (2<sup>nd</sup> degree)
  - Extends down to inner layers (dermis)
  - Pain & blistering
- ▶ **Full thickness** (3<sup>rd</sup> degree)
  - Extends into underlying tissue, i.e. fat & nerves
  - Charred, leathery, painless
- ▶ **4<sup>th</sup> degree** – extends into muscle & bone

# Types of Burns

- ▶ Scald
  - Splash/spill
  - Immersion
- ▶ Contact
- ▶ Flame
- ▶ Electrical
- ▶ Chemical



# Scald Burns - Spill pattern

- ▶ Splash/spill burn
- ▶ Irregular edges
- ▶ Splash marks
- ▶ Often face, chest, arms
- ▶ Arrow shaped
- ▶ Varying depth
- ▶ Deepest burn = point of initial contact



# Scald burn - Spill pattern...



# Scald Burns - Immersion pattern

- ▶ Most common inflicted burn
- ▶ Well demarcated with no splash marks
- ▶ Primarily to extremities / buttocks
- ▶ Pattern
  - “Stocking” pattern
  - “Glove” pattern
  - “Donut-shaped” pattern
  - Spared creases
- ▶ Uniform depth

# “Stocking” Burns





# “Glove” Burn

## ► 13.1, ► 13.2 Male aged 18 months

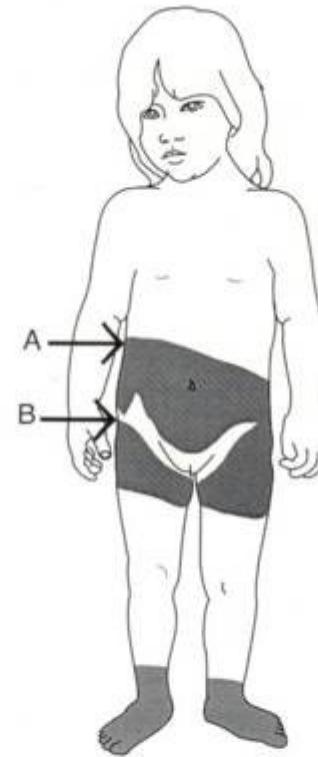
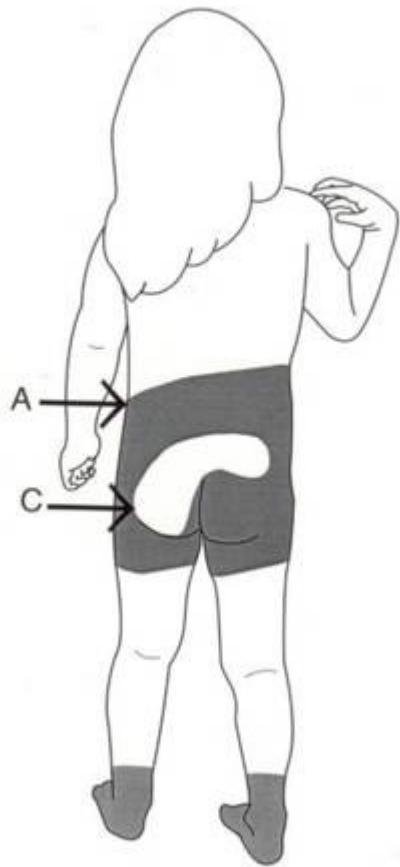
Child who was said to have climbed in the bath when his mother's back was turned. She heard him shout and on turning found him on all fours kneeling in the bath. Both forearms burned for a distance of 4 in from the wrist. Circumferential scalds symmetrically to both arms; clear demarcation line without splash marks. No scalds elsewhere. Pattern of forced immersion scalds.



# “Glove” Burns



# Immersion Pattern



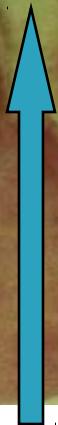
**Figure 3.5a.** Forced immersion burn.

As the child's buttocks are plunged into the hot liquid and held against the porcelain tub, the child instinctively flexes the hips. The burn is well demarcated (A). The crease between the thigh and abdomen is spared (B).

# “Donut-shaped” Burn



**Well demarcated edges with little splash**



**Spared creases**

**Uniform depth**

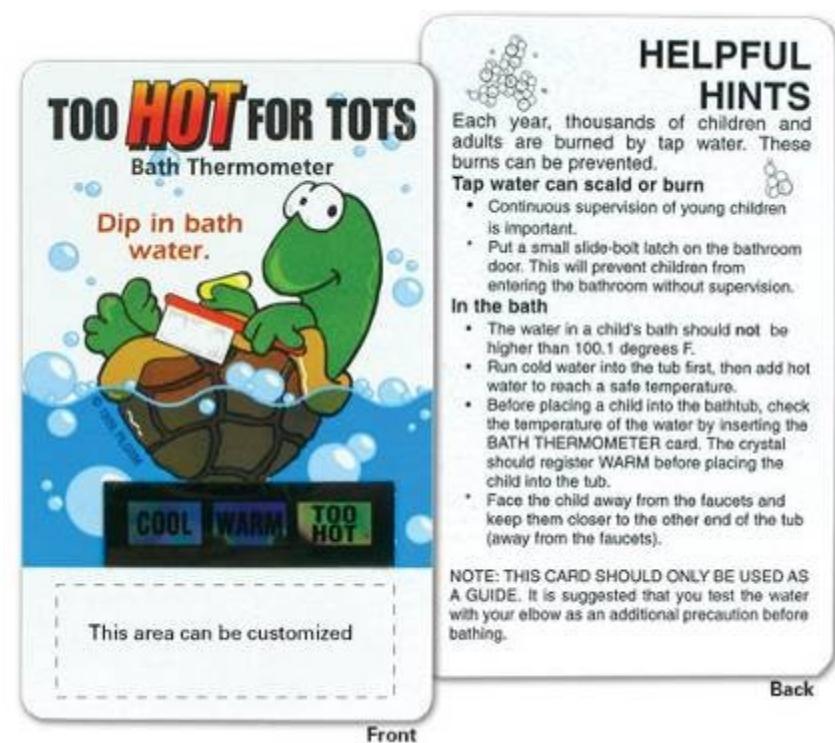
# Scald Burn - Vital Details

- ▶ Detailed scene investigation
  - Photos / description of bathroom / kitchen
  - Measurements of tub / sink / stove
  - Step-by-step recreation of event
  - What child was wearing at the time
- ▶ Child's accessibility
  - Child's size relative to surroundings
  - Child's abilities relative to surroundings
- ▶ What was precipitating event
  - Toilet training, spilled food, discipline

# Scald Burn - Vital Details

## ► Temperature of water

- When initially turned on
- When left on for period of time - measure temperature at intervals
- Highest temperature reached
- Time it takes to reach that temperature



# What is too hot?

- ▶ Bathwater is usually comfortable at 101
- ▶ Hot tub usually 106-108
- ▶ Pain threshold for adult 109-118
- ▶ Temperature vs. time for second degree burn

Temp. (F)	Adult Skin	Child Skin
127	60 seconds	–
130	30	10
140	5	1
150	2	< 1
158	1	< 1

# Dry Contact Burns

Hot object contacts skin

Most frequent:

- Irons
- Hair dryers
- Cigarettes
- Grills from stove, heater
- Hair curlers
- Cigarette lighters
- Light bulbs

# Contact Burns

## - Non-inflicted

- ▶ Glancing
- ▶ More superficial
- ▶ Single plane
- ▶ On exposed areas

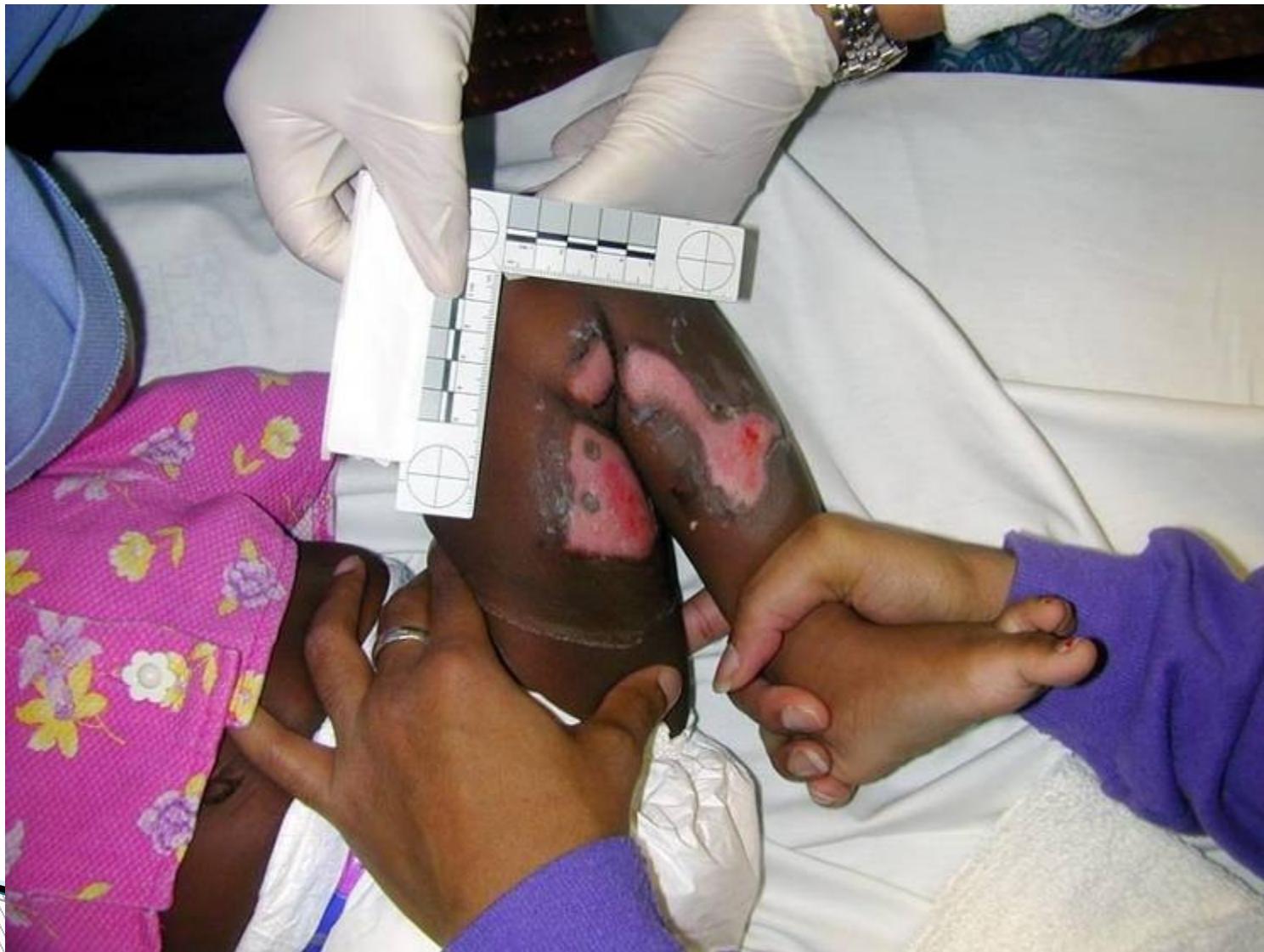


# Contact Burns - Inflicted

- ▶ Uniform / geometric
- ▶ Deeper
- ▶ Multiple planes
- ▶ On protected areas
- ▶ Delay in seeking care



# Inflicted Iron Burn













# Contact Burn--Lighter



# Contact Burn - Vital Details

- ▶ Detailed scene investigation
  - Location of the heated object / surface
  - Photos / description of object
- ▶ Child's accessibility to object / surface
- ▶ Properties of the object
  - Temperature of object / surface
  - Shape / pattern of the object / surface
  - If possible, bring object in to be viewed

# Cigarette Lighter Test - Activity

A witness claims the child was burned while playing with a disposable cigarette lighter. Cigarette lighters cause a specific injury pattern.

1. Take an inkpad and re-create the top of the lighter on a piece of paper, and note the pattern.
2. Next, using the inkpad, re-create the pattern on different parts of your body.

***Is the explanation plausible?***

# Cigarette Burns

- ▶ 8-10 mm diameter
- ▶ Central crater / ulcer
- ▶ Surrounding more superficial



- ▶ Inflicted
  - Deeper
  - Uniform
  - On protected areas
- ▶ Non-inflicted
  - Superficial
  - Glancing
  - On exposed areas

# Inflicted Cigarette Burn



# Healing Cigarette Burn



# Healed Cigarette Burn



*Figure 2-8f*

# Flame Burn



# Flame Burn - Vital Details

- ▶ Detailed scene investigation
  - Location of flame source
  - Photos / description of flame source
- ▶ Child's accessibility to flame source
- ▶ Properties of flame source
  - How it is turned on and off (lighter, stove)
  - Where the flame is located (lighter, candle)
  - Who is responsible for the flame source

# Electrical burn



*Figure 2-58a*

JA Monteleone, Child Maltreatment,  
2<sup>nd</sup> Edition, 1998

# Electrical Burns - Vital Details

- ▶ Detailed scene investigation
  - Location of source of electrical burn
  - Photos / description of source
- ▶ Child's accessibility to electrical source
- ▶ Properties of electrical source
  - Frayed wires
  - Uncovered electrical outlets
  - Defective appliances / gadgets

# Chemical Burn



# Chemical Burns - Vital Details

- ▶ Detailed scene investigation
  - Location of chemical
  - Description of container
- ▶ Child's accessibility to chemical substance
- ▶ Was there a delay in seeking medical care?

# Red Flags!



- ▶ **Inconsistent history**
  - Changing history
  - Incompatible with developmental level
  - Incompatible pattern of burn
- ▶ **“Magical burn”** - no history given
- ▶ **Attributed to sibling / playmate**
- ▶ **Delay in seeking care**
- ▶ **Other signs of CA/N**

# Some Medical Conditions Mimic Abuse



# **Burns - Summary**

- ▶ **What are your gut reactions to these graphic slides?**
- ▶ **Can you observe these injuries?**
- ▶ **Can you document these injuries?**
- ▶ **Can you work with these families...**
  - **Identify their strengths?**
  - **Help them protect their children?**

# Questions?

